



Environmental Protection Agency Region 5
Chicago Regional Laboratory

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WORK ORDER

Printed: 10/3/2017 2:05:43PM

1709003

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, WECA Region 5

Project Manager: Angela Ockrassa Davis

Project: U.S. Steel - Minntac Tailings Basin Area Facility

Project Number: 02DM17

Report To:

Dean Maraldo
Water Division, WECA Region 5

77 West Jackson Boulevard
Chicago, IL 60604

Phone: (312) 353-2098
Fax: (312) 886-2001

Date Due: Oct-30-17 15:00 (45 day TAT)

Received By: Robert Snyder

Date Received: Sep-14-17 13:26

Logged In By: Robert Snyder

Date Logged In: Sep-15-17 14:44

Samples Received at:

Cooler #1 Temp: 3.1 °C

Work Order Comments:

Sample tags/labels

Yes

Cooler #2 Temp: 2.3 °C

See QAPP for metals list

Seals Intact

Yes

pH paper used in SC = 16H2601

Received on ice

Yes

Paperwork Included

Yes

Sample ID: 1709003-01

Sampled: Sep-12-17 09:57

Matrix: Water

Sample Name: S01

Sample Location/Comments: Seep A

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 09:57	pH = 7
Anions by IC	28	Oct-10-17 09:57	pH = 7
Ca ICP (W)	180	Mar-11-18 09:57	pH = 2
Hardness by calc	180	Mar-11-18 09:57	pH = 2
Hg Total CVAA	28	Oct-10-17 09:57	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 09:57	pH = 2
Metals ICP-MS (w)	180	Mar-11-18 09:57	pH = 2
Mg ICP (W)	180	Mar-11-18 09:57	pH = 2
Solids, TDS	7	Sep-19-17 09:57	pH = 7
Solids, TSS	7	Sep-19-17 09:57	pH = 7

Sample ID: 1709003-02

Sampled: Sep-12-17 10:23

Matrix: Water

Sample Name: S02

Sample Location/Comments: Dark River Pond Seep

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 10:23	pH = 7
Anions by IC	28	Oct-10-17 10:23	pH = 7
Ca ICP (W)	180	Mar-11-18 10:23	pH = 2
Hardness by calc	180	Mar-11-18 10:23	pH = 2

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Sample ID: 1709003-02 Sampled: Sep-12-17 10:23 Matrix: WaterSample Name: S02 Sample Location/Comments: Dark River Pond Seep

Analysis	Hold time (days)	Expires	Comments
Hg Total CVAA	28	Oct-10-17 10:23	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 10:23	pH = 2
Metals ICP-MS (w)	180	Mar-11-18 10:23	pH = 2
Mg ICP (W)	180	Mar-11-18 10:23	pH = 2
Solids, TDS	7	Sep-19-17 10:23	pH = 7
Solids, TSS	7	Sep-19-17 10:23	pH = 7

Sample ID: 1709003-03 Sampled: Sep-12-17 10:50 Matrix: WaterSample Name: S03 Sample Location/Comments: Seep 3

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 10:50	pH = 7
Anions by IC	28	Oct-10-17 10:50	pH = 7
Ca ICP (W)	180	Mar-11-18 10:50	pH = 2
Hardness by calc	180	Mar-11-18 10:50	pH = 2
Hg Total CVAA	28	Oct-10-17 10:50	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 10:50	pH = 2
Metals ICP-MS (w)	180	Mar-11-18 10:50	pH = 2
Mg ICP (W)	180	Mar-11-18 10:50	pH = 2
Solids, TDS	7	Sep-19-17 10:50	pH = 7
Solids, TSS	7	Sep-19-17 10:50	pH = 7

Sample ID: 1709003-04 Sampled: Sep-12-17 11:08 Matrix: Water QC Source SampleSample Name: S04 Sample Location/Comments: SD001

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 11:08	pH = 7
Anions by IC	28	Oct-10-17 11:08	pH = 7
Ca ICP (W)	180	Mar-11-18 11:08	pH = 2
Hardness by calc	180	Mar-11-18 11:08	pH = 2
Hg Total CVAA	28	Oct-10-17 11:08	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 11:08	pH = 2
Metals ICP-MS (w)	180	Mar-11-18 11:08	pH = 2
Mg ICP (W)	180	Mar-11-18 11:08	pH = 2
Solids, TDS	7	Sep-19-17 11:08	pH = 7

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Sample ID: 1709003-04 Sampled: Sep-12-17 11:08 Matrix: Water QC Source SampleSample Name: S04 Sample Location/Comments: SD001

Analysis	Hold time (days)	Expires	Comments
Solids, TSS	7	Sep-19-17 11:08	pH = 7

Sample ID: 1709003-05 Sampled: Sep-12-17 11:08 Matrix: WaterSample Name: D05 Sample Location/Comments: SD001 Duplicate

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 11:08	pH = 7
Anions by IC	28	Oct-10-17 11:08	pH = 7
Ca ICP (W)	180	Mar-11-18 11:08	pH = 2
Hardness by calc	180	Mar-11-18 11:08	pH = 2
Hg Total CVAA	28	Oct-10-17 11:08	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 11:08	pH = 2
Metals ICP-MS (w)	180	Mar-11-18 11:08	pH = 2
Mg ICP (W)	180	Mar-11-18 11:08	pH = 2
Solids, TDS	7	Sep-19-17 11:08	pH = 7
Solids, TSS	7	Sep-19-17 11:08	pH = 7

Sample ID: 1709003-06 Sampled: Sep-12-17 11:30 Matrix: WaterSample Name: S06 Sample Location/Comments: Seep 7

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 11:30	pH = 7
Anions by IC	28	Oct-10-17 11:30	pH = 7
Ca ICP (W)	180	Mar-11-18 11:30	pH = 2
Hardness by calc	180	Mar-11-18 11:30	pH = 2
Hg Total CVAA	28	Oct-10-17 11:30	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 11:30	pH = 2
Metals ICP-MS (w)	180	Mar-11-18 11:30	pH = 2
Mg ICP (W)	180	Mar-11-18 11:30	pH = 2
Solids, TDS	7	Sep-19-17 11:30	pH = 7
Solids, TSS	7	Sep-19-17 11:30	pH = 7

Sample ID: 1709003-07 Sampled: Sep-12-17 11:51 Matrix: WaterSample Name: S07 Sample Location/Comments: Seep 13

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 11:51	pH = 7

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Sample ID: 1709003-07 Sampled: Sep-12-17 11:51 Matrix: Water

Sample Name: S07 Sample Location/Comments: Seep 13

Analysis	Hold time (days)	Expires	Comments
Anions by IC	28	Oct-10-17 11:51	pH = 7
Ca ICP (W)	180	Mar-11-18 11:51	pH = 2
Hardness by calc	180	Mar-11-18 11:51	pH = 2
Hg Total CVAA	28	Oct-10-17 11:51	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 11:51	pH = 2
Metals ICP-MS (w)	180	Mar-11-18 11:51	pH = 2
Mg ICP (W)	180	Mar-11-18 11:51	pH = 2
Solids, TDS	7	Sep-19-17 11:51	pH = 7
Solids, TSS	7	Sep-19-17 11:51	pH = 7

Sample ID: 1709003-08 Sampled: Sep-12-17 14:03 Matrix: Water

Sample Name: S08 Sample Location/Comments: East "Background" Wetland

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 14:03	pH = 7
Anions by IC	28	Oct-10-17 14:03	pH = 7
Ca ICP (W)	180	Mar-11-18 14:03	pH = 2
Hardness by calc	180	Mar-11-18 14:03	pH = 2
Hg Total CVAA	28	Oct-10-17 14:03	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 14:03	pH = 2
Metals ICP-MS (w)	180	Mar-11-18 14:03	pH = 2
Mg ICP (W)	180	Mar-11-18 14:03	pH = 2
Solids, TDS	7	Sep-19-17 14:03	pH = 7
Solids, TSS	7	Sep-19-17 14:03	pH = 7

Sample ID: 1709003-09 Sampled: Sep-12-17 15:00 Matrix: Water

Sample Name: S09 Sample Location/Comments: CB-12 outside sheet pile

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 15:00	pH = 6
Anions by IC	28	Oct-10-17 15:00	pH = 6
Ca ICP (W)	180	Mar-11-18 15:00	pH = 2
Hardness by calc	180	Mar-11-18 15:00	pH = 2
Hg Total CVAA	28	Oct-10-17 15:00	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 15:00	pH = 2

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Sample ID: 1709003-09 Sampled: Sep-12-17 15:00 Matrix: Water

Sample Name: S09 Sample Location/Comments: CB-12 outside sheet pile

Analysis	Hold time (days)	Expires	Comments
Metals ICP-MS (w)	180	Mar-11-18 15:00	pH = 2
Mg ICP (W)	180	Mar-11-18 15:00	pH = 2
Solids, TDS	7	Sep-19-17 15:00	pH = 6
Solids, TSS	7	Sep-19-17 15:00	pH = 6

Sample ID: 1709003-10 Sampled: Sep-12-17 15:15 Matrix: Water

Sample Name: S10 Sample Location/Comments: CB-12 inside sheet pile

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-26-17 15:15	pH = 7
Anions by IC	28	Oct-10-17 15:15	pH = 7
Ca ICP (W)	180	Mar-11-18 15:15	pH = 2
Hardness by calc	180	Mar-11-18 15:15	pH = 2
Hg Total CVAA	28	Oct-10-17 15:15	pH = 2
Metals ICP-AES (w)	180	Mar-11-18 15:15	pH = 2
Metals ICP-MS (w)	180	Mar-11-18 15:15	pH = 2
Mg ICP (W)	180	Mar-11-18 15:15	pH = 2
Solids, TDS	7	Sep-19-17 15:15	pH = 7
Solids, TSS	7	Sep-19-17 15:15	pH = 7

Sample ID: 1709003-11 Sampled: Sep-13-17 09:44 Matrix: Water

Sample Name: S11 Sample Location/Comments: CB-5 outside sheet pile mid

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-27-17 09:44	pH = 7
Anions by IC	28	Oct-11-17 09:44	pH = 7
Ca ICP (W)	180	Mar-12-18 09:44	pH = 2
Hardness by calc	180	Mar-12-18 09:44	pH = 2
Hg Total CVAA	28	Oct-11-17 09:44	pH = 2
Metals ICP-AES (w)	180	Mar-12-18 09:44	pH = 2
Metals ICP-MS (w)	180	Mar-12-18 09:44	pH = 2
Mg ICP (W)	180	Mar-12-18 09:44	pH = 2
Solids, TDS	7	Sep-20-17 09:44	pH = 7
Solids, TSS	7	Sep-20-17 09:44	pH = 7

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Sample ID: 1709003-12 Sampled: Sep-13-17 09:49 Matrix: Water

Sample Name: S12 Sample Location/Comments: CB-5 inside sheet pile

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-27-17 09:49	pH = 7
Anions by IC	28	Oct-11-17 09:49	pH = 7
Ca ICP (W)	180	Mar-12-18 09:49	pH = 2
Hardness by calc	180	Mar-12-18 09:49	pH = 2
Hg Total CVAA	28	Oct-11-17 09:49	pH = 2
Metals ICP-AES (w)	180	Mar-12-18 09:49	pH = 2
Metals ICP-MS (w)	180	Mar-12-18 09:49	pH = 2
Mg ICP (W)	180	Mar-12-18 09:49	pH = 2
Solids, TDS	7	Sep-20-17 09:49	pH = 7
Solids, TSS	7	Sep-20-17 09:49	pH = 7

Sample ID: 1709003-13 Sampled: Sep-13-17 09:55 Matrix: Water

Sample Name: S13 Sample Location/Comments: CB-5 outside sheet pile north

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-27-17 09:55	pH = 7
Anions by IC	28	Oct-11-17 09:55	pH = 7
Ca ICP (W)	180	Mar-12-18 09:55	pH = 2
Hardness by calc	180	Mar-12-18 09:55	pH = 2
Hg Total CVAA	28	Oct-11-17 09:55	pH = 2
Metals ICP-AES (w)	180	Mar-12-18 09:55	pH = 2
Metals ICP-MS (w)	180	Mar-12-18 09:55	pH = 2
Mg ICP (W)	180	Mar-12-18 09:55	pH = 2
Solids, TDS	7	Sep-20-17 09:55	pH = 7
Solids, TSS	7	Sep-20-17 09:55	pH = 7

Sample ID: 1709003-14 Sampled: Sep-13-17 10:23 Matrix: Water

Sample Name: S14 Sample Location/Comments: Dark River Pond

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-27-17 10:23	pH = 7
Anions by IC	28	Oct-11-17 10:23	pH = 7
Ca ICP (W)	180	Mar-12-18 10:23	pH = 2
Hardness by calc	180	Mar-12-18 10:23	pH = 2
Hg Total CVAA	28	Oct-11-17 10:23	pH = 2

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Sample ID: 1709003-14 Sampled: Sep-13-17 10:23 Matrix: Water

Sample Name: S14 Sample Location/Comments: Dark River Pond

Analysis	Hold time (days)	Expires	Comments
Metals ICP-AES (w)	180	Mar-12-18 10:23	pH = 2
Metals ICP-MS (w)	180	Mar-12-18 10:23	pH = 2
Mg ICP (W)	180	Mar-12-18 10:23	pH = 2
Solids, TDS	7	Sep-20-17 10:23	pH = 7
Solids, TSS	7	Sep-20-17 10:23	pH = 7

Sample ID: 1709003-15 Sampled: Sep-13-17 11:10 Matrix: Water

Sample Name: S15 Sample Location/Comments: Timber Creek

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-27-17 11:10	pH = 7
Anions by IC	28	Oct-11-17 11:10	pH = 7
Ca ICP (W)	180	Mar-12-18 11:10	pH = 2
Hardness by calc	180	Mar-12-18 11:10	pH = 2
Hg Total CVAA	28	Oct-11-17 11:10	pH = 2
Metals ICP-AES (w)	180	Mar-12-18 11:10	pH = 2
Metals ICP-MS (w)	180	Mar-12-18 11:10	pH = 2
Mg ICP (W)	180	Mar-12-18 11:10	pH = 2
Solids, TDS	7	Sep-20-17 11:10	pH = 7
Solids, TSS	7	Sep-20-17 11:10	pH = 7

Sample ID: 1709003-16 Sampled: Sep-13-17 12:52 Matrix: Water

Sample Name: R16 Sample Location/Comments: Field Blank

Analysis	Hold time (days)	Expires	Comments
Alkalinity	14	Sep-27-17 12:52	pH = 5
Anions by IC	28	Oct-11-17 12:52	pH = 5
Ca ICP (W)	180	Mar-12-18 12:52	pH = 2
Hardness by calc	180	Mar-12-18 12:52	pH = 2
Hg Total CVAA	28	Oct-11-17 12:52	pH = 2
Metals ICP-AES (w)	180	Mar-12-18 12:52	pH = 2
Metals ICP-MS (w)	180	Mar-12-18 12:52	pH = 2
Mg ICP (W)	180	Mar-12-18 12:52	pH = 2
Solids, TDS	7	Sep-20-17 12:52	pH = 5
Solids, TSS	7	Sep-20-17 12:52	pH = 5

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US EPA Region 5 Chicago Regional Laboratory**Client: Water Division, WECA Region 5****Project Manager: Angela Ockrassa Davis****Project: U.S. Steel - Minntac Tailings Basin Area Facility****Project Number: 02DM17****Analysis groups included in this work order**Hardness by calc

Mg ICP (W)

Ca ICP (W)

PROJECT COMMENTS: See QAPP for metals list

Anions: Br, Cl, Fl, SO4